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ABSTRACT

As classrooms change and become more student-centered, it is essential to provide preservice teachers with opportunities that enhance their learning of different strategies. One strategy commonly seen in student-centered classrooms is the use of learning centers. This study began when three primary teachers (two third grade teachers and one special education teacher) and their principal expressed interest in collaborating with a university teacher education professor. The purpose of the study was to assess the quality of learning centers designed by preservice teachers and student learning in those centers through the use of survey information from third grade students. Forty-six third grade students and nine preservice teachers participated in the study. Special education services in the school followed an inclusion model, with students placed in the regular classroom with their same age peers. Preservice teacher reflections and the third graders' responses on surveys designed to provide feedback on nine learning centers were used as the data source analyzed for this study. Implications are that studies of this nature can be extended to further expand the knowledge of collaborative and mentoring programs, gain perspective on how children view their own learning, develop self-assessment and reflection skills, and support motivation of learners at all levels. (Author/SM)

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Preservice Teachers Design "Cool" & "Awesome" Learning Environments

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Abstract

As classrooms change and become more student-centered, it is essential to provide our preservice teachers with opportunities that enhance their learning of different strategies. One strategy commonly seen in student-centered classrooms is the use of learning centers. This study began when three primary teachers (two third grade teachers and one special education teacher) and their principal expressed interest in collaborating with a university teacher education professor. The purpose of the study was to assess the quality of learning centers designed by preservice teachers and student learning in those centers through the use of survey information from third grade students. Forty-six third grade students and nine preservice teachers participated in this study. Special education services in this school followed an inclusion model with students placed in the regular classroom with their same age peers. Preservice teacher reflections and the third graders' responses on surveys designed to provide feedback on nine learning centers were used as the data source analyzed for this study. Implications are that studies of this nature can be extended to further expand the knowledge of collaborative and mentoring programs, gain perspective on how children view their own learning, develop self-assessment and reflection skills, and support motivation of learners at all levels.

Preservice Teachers Design "Cool" & "Awesome" Learning Environments

Celia E. Johnson, Rosalyn Anstine Templeton, Joann Thomas,
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Opportunities for preservice teachers to connect theory to practice typically do not occur until they are near the end of their undergraduate program when they student teach as seniors or in some programs during a junior year practicum. Providing preservice teachers with such opportunities early on can enhance their learning through a more meaningful context. Learning about the importance of meeting individual needs, strategies and adaptations, designing and creating lessons, teaching the lessons, assessing children's learning, and then doing self-assessment lays a strong foundation for success as a new teacher. For this study, a small group of education majors taking their introductory methods course embraced the opportunity to connect theory to practice. They were able to start application from the beginning of learning about various strategies and methods, particularly the strategy of incorporating learning centers as a means of meeting individual needs within the classroom environment.

Purpose

As classrooms change and become more student-centered, it is essential to provide our preservice teachers with opportunities that enhance their learning of different strategies. One strategy commonly seen in student-centered classrooms is the use of learning centers, also referred to as learning activity centers and work stations, areas, or centers. The purpose of this study was to examine preservice teachers' perceptions of their own learning and the learning of third graders as they experienced the use of learning centers in the classroom setting.

Perspectives

As we learn more about how children learn and what they need to support their learning, teachers are expected to change. The numerous responsibilities that face teachers in the 21st

century can be overwhelming as they seek to meet the individual needs of the many different children in their classrooms. One strategy used successfully in creating learning environments that support a variety of needs is the learning center.

Typically, learning centers are in designated areas of classrooms where students can find authentic materials for studying a particular subject or topic. Materials are intentionally selected to support the learning of a particular concept or skill. Tomlinson (1999) defines learning centers as "a classroom area that contains a collection of activities or materials designed to teach, reinforce, or extend a particular skill or concept" (p. 76). In these designated areas, students have opportunities to be actively engaged in simple to complex tasks on an independent or cooperative level. Learning centers allow for students to practice decision making, following directions, learning new skills, and using resources and materials (Freiberg & Driscoll, 1996, chap. 9; Sloane, 1999; Snowden & Christian, 1998; Wood, 1997, chap. 4). Additionally, students working cooperatively develop social skills and learn from each other (Snowden & Christian, 1998; Stone, 1998). Kellough and Roberts (1998, chap. 9) identify three aspects of value for learning centers, (1) instructional diversity, (2) time for students to devote to learning tasks, and (3) opportunity for students to engage their most effective learning modality or to integrate modalities. Furthermore, learning centers can facilitate the creation of truly literate learning environments by integrating literacy into all centers (Stone, 1996). A plus with the current and important emphasis on improving reading skills at all levels.

Learning centers vary in many aspects beyond the subject, topic, concept or skill. Kellough & Roberts (1998, chap. 9) classify learning centers into three types, (1) direct-learning centers highlighting mastery of content, (2) open-learning centers providing opportunity for exploration and enrichment and discovery, and (3) skill centers focused on the development of a

particular skill or process. Snowden and Christian (1998) identify four levels of learning centers used in classrooms, (1) teacher-planned/teacher-directed, (2) teacher-planned/student-directed, (3) student-planned/teacher-directed, and (4) student-planned/student-directed. The four levels provide a hierarchy for reference as teachers work to move their instruction in a more student-centered direction. Critical to the success of any learning center in providing optimal learning opportunities for all students is the teacher's planning and preparation. Each center must have purpose and should be aligned with appropriate learning standards to ensure that the learning experience away from the teacher is spent as quality learning time.

Included in the planning and preparation is the assessment of student learning. As with any learning experience, teachers must be deliberate in documenting student learning as they participate in learning center activities. Not only do learning centers allow for variety in the learning process, they allow for variety in the documentation of what students learn as they become engaged in meaningful experiences. As active learners, students can become active participants in the assessment process taking on a much more personal role. With student-centered classrooms, teachers do less transmitting and more facilitating, and students become more responsible for their learning throughout the whole process of planning, assessing, and documenting (Sloane, 1999; Wood, 1997). In this study, preservice teachers focused on learning centers in the process of learning about, designing, teaching, and assessing their own learning as well as the learning of third grade students.

Method

This study began when three primary grade school teachers (two third grade teachers and one special education teacher) and their principal expressed interest in collaborating with a

university teacher education professor. Their collaboration resulted in designing a project that included sophomore level preservice teachers and the classroom teachers' third grade students.

Participants

Forty-six students in two third grade classrooms and nine preservice teachers participated in this study. The participants attended a primary school and midsized private liberal arts university residing in the Midwestern United States in a metropolitan community of approximately 400,000 residents. The demographic make up of the children attending the primary school was approximately 77% Caucasian, 14% African American, 8% Asian, and 1% Hispanic. Additionally, 21% of the children participated in a subsidized lunch program, 1% had limited English and there was a 14% mobility rate. Special education services in this primary school followed an inclusion model with students placed in the regular classroom with their same age peers.

Learning Centers

One of the primary goals of the introductory methods class is for students to begin to link theory to practice. During a spring semester, nine preservice teachers developed individual thematic units that included the design of a learning center focused on their chosen unit theme. For their learning center, they were to prepare an introductory lesson aligned with learning standards, student directions, and materials. The second week of the semester included a visit by the collaborating principal and one classroom teacher. They both shared their knowledge about and experiences with learning centers. A sample learning center was explored along with handouts on addressing the purposes for learning centers, guidelines in creating centers to meet individual needs and learning styles, and basic tips (e.g. inexpensive materials, durability, etc.). After selecting unit themes, the preservice teachers visited the third grade classrooms. During

this visit they were able to discuss their unit theme and brainstorm ideas for learning centers with the two third grade classroom teachers.

The learning center project that was the focus of this study was a part of creating their first thematic unit. After learning about standards, goals, objectives, and best practices in instruction, the following directions for writing their lessons and creating their learning centers were included in the guidelines for their thematic units:

> Lessons are to include: objectives (linked to the IL goals , purpose or rationale, materials, procedures, and assessment. **These lessons must demonstrate best practice principles of teaching.**
>
> For the **learning center** design, include **permanent materials** with an introductory lesson plan. You will have the opportunity to teach your lesson and evaluate your center with third graders. Your design, introductory lesson, and reflective evaluation are what you will need to include in this section of the unit plan.

The nine learning centers designed by the preservice teachers in this study were quite varied in type and content focus. Based on Kellough and Roberts (1998) four types of learning centers, all of the nine learning centers were teacher focused in the planning with the ultimate goal of having students work independently once they understood the expectations. According to the previously mentioned types (Kellough and Roberts,1998) and levels of learning centers (Snowden and Christians, 1998), the following classifications were applied as seen in Table 1:

TABLE 1: Types and Levels of Learning Centers

Learning Center Title	Type of Center	Level of Center
Facts About Presidents	Open-learning/Direct-learning	Teacher-planned/student-directed
U.S. Map	Direct-learning	Teacher-planned/student-directed
Olympic Challenge	Direct-learning/Skill	Teacher-planned/student-directed
Eggs & Adverbs	Direct-learning	Teacher-planned/student-directed
Store: Money Center	Skill	Teacher-planned/student-directed
Geometry Center	Direct-learning	Teacher-planned/student-directed
Presidents Concentration	Open-learning	Teacher-planned/student-directed
Astronomy/Space	Open-learning/Direct-learning	Teacher-planned/student-directed
Cave Art	Open-learning	Teacher-planned/student-directed

Some of the learning centers could be classified as more than one type because of the different activities included or the types of conclusions the student could make upon completion of the process (see Appendix A for pictures of some of the learning centers in action).

Learning Cenier Questionnaires

After designing their learning centers and planning an introductory lesson, the preservice teachers began thinking about how to assess the third grade children's learning center experience. The preliminary discussion prior to designing the questionnaire addressed the need for simplicity and ease so that the process of completing the questionnaires by the children would not become laborious. It was first decided to use a likert scale and have the children rate the centers, but the concern was that they would not get enough information from a simple rating scale. Therefore, the decision was to design a one page questionnaire with a maximum of five open-ended questions. There were two goals identified by the preservice teachers in designing the questionnaire. First, they wanted to be able to assess the quality of the learning centers. They created the following three questions to obtain information relative to quality:

1. What was "cool" about the center?
2. What would make it awesome (better)?
3. Did you understand the directions?

Second, they wanted the children to be able to asses their own learning after participating in the learning center activities. Two questions were written to address individual learning:

1. What did you learn?
2. What would you like to learn more about?

Once the questionnaire was designed, it was decided it would be printed on colored paper with a different color corresponding to each center. This allowed for easy organization of the questionnairs upon completion (see Appendix B for a copy of the survey).

The week prior to spring break, the preservice teachers returned to the third grade classrooms with their completed learning center materials and directions (five centers were set up in one class and four in the other). The third graders in each classroom were divided into small groups to rotate through the different centers. For approximately two hours, the preservice teachers taught their introductory lesson as each small group rotated through, and were able to facilitate the children's initial experiences with the designed activity. The learning centers remained in the classrooms for a week during which time the third graders were able to work independently and complete the questionnairs.

Preservice Teachers' Reflective Evaluations

One component used to assess the learning and perspective of the preservice teachers was a reflective evaluation written by each of the students (preservice teachers) at the conclusion of the total collaborative experience. The reflective evaluations were written after the preservice teachers completed their part of the project and after they had had a chance to read the children's responses on the questionnaires. Instructions to preservice teachers on writing the reflective evaluation of their learning centers were stated as follows:

> Your reflective evaluation should focus on whether or not the objective addressed by the activity in your learning center was met. If the objective was not met explain why you think this is so and what would need to be changed so that it could be met. Also, include how you could improve the center and how you felt about the project as a whole. Be sure to support your statements.

Data Source

Researchers collected and analyzed data from the learning center questionnaires completed by the third graders and from the preservice teachers' reflective evaluations using a qualitative coding method (Miles & Huberman, 1994). Data from the learning center questionnaires were reviewed and the information was categorized into meaningful units, and

then quantified according to the categories. Inter-coder reliability was computed on 30% of coded responses. An average reliability of 91% was obtained across the five open-ended questions. Coding and analysis were done as a composite on the 161 total questionnaires for the nine centers. The reflective evaluations were analyzed to determine the preservice teachers' perspective on their own and the children's overall learning experience with the learning centers based on the quidelines for writing the reflections.

Findings

Learning Center Questionnaires

Relative to the quality of the learning centers, 98% (N=175) of the third graders identified specific aspects that made the different learning centers "cool." These were coded into three categories of hands on, a favorite subject/fun, or a game format that was challenging and allowed them to work in small groups with friends. Students also made positive comments that were considered to reflect on the overall quality of the centers. Such comments typically referred to the construction or choice of materials. Examples of children's comments illustrating the "cool" aspects and overall positive comments are provided in Table 2.

Results of their feedback for making the center awesome (how to improve it) indicate that 37% (N=162) thought that the centers should stay just the same and another 37% (N=162) made suggestions to have more of the same in specific materials, questions, or prizes while 18% (N=162) made specific suggestions on how to extend the concept of the centers such as doing a similar map activity with the continents or adding facts on the back of puzzle pieces. Examples of comments on how to make the centers "awesome" are included in Table 2. Virtually all of the children (99%) (N=161) understood the directions with one child indicating he/she "kind of" understood.

TABLE 2: Third graders identify quality aspects of the learning centers.

Quality Comments	N	Sample Statements
"Cool" learning centers or Positive comments	175	*You got to Velcro the pieces (U.S. Map) *It was cool because I like math & it had math in it (Olympic Challenge) *It was cool, because it was funny. For example, a dollar hit a dam and "a dam" is for "John Adams" (Facts About Presidents) *I think it was cool, because we got to look at cartoon pictures (Facts About Presidents) *I liked the vibrate (vibrant) colors (U.S. Map) *I think the torch was a good idea & it looks very nice (Olympic Challenge) *The idea of the colored eggs was cool (Eggs & Adverbs) *I liked the cash register (Store: Money Center) *I liked the stick board where you put the planets on (Astronomy/Space)
"Awesome" learning centers	162	*I think it would be better by putting little facts about them on the back of them (Velcro puzzle pieces of U.S. Map) *It would be better if you could use a credit card (Store: Money Center) *If there were candy inside, so when you get them all right you get to eat the candy (Eggs & Adverbs)
Understanding directions	161	*Yes, I did understand the directions very well (Art Cave)

The success of the centers was reinforced when the third graders identified what they had learned with 79% (N=165) of the children specifically stating one thing that they learned about and 19% (N=165) identifying more than one thing. The specificity of the children's comments can be seen in Table 3.

TABLE 3: Third graders' assessments of what they learned.

Individual Learning Assessment	N	Sample Statements
What was learned?	165	*I learned how to remember all the presidents in order (Facts About Presidents) *About the states and where they are (U.S. Map) *I learned how to divide better and how to do times better (Olympics Challenge) *I learned that adverbs had ly in it (Eggs & Adverbs) *A lot about change and prices and making change and how to use a cash register (Store: Money Center) *I learned about the vertex and sides (Geometry Center) *I learned that president Bill Clinton played the saxophone (President Concentration) *I learned about planet order and that Jupiter is the biggest planet (Astronomy/Space) *I learned how to use charcoal and a new way to paint (Cave Art)

Additionally, 88% (N=160) indicated they wanted to learn more about the topic or related topics such as the different moons of the planets. Only 9% (N=160) wrote they did not need to learn anything else and 3% (N=160) didn't know if they wanted to learn anything else. Overall, the survey results provided good feedback for the preservice teachers as they continue to develop skills in designing learning centers that are motivating and promote quality learning.

Preservice Teachers' Reflective Evaluations

Initially, the preservice teachers expressed some anxiety about what to expect from the third graders and whether their individual learning center would be something the children would like. This is illustrated in one student's reflection:

> At first I did not know how the students were going to feel about the game because I know that the presidents are something that I enjoy and not everyone feels the same way. I also did not know how much the student already knew about the presidents.

Initial anxiety is to be expected, as was the disappearance of those anxieties once they were able to start working with the children. Only three of the preservice teachers' reflections specifically stated that the goals and objectives of their center were met by student learning based on their observations or the results of the survey responses. Six students stated that the children "enjoyed" the lesson or center which was corroborated by the survey responses. Focusing on the joy of learning in assessment over content is not atypical of preservice teachers, particularly at the sophomore level.

Relative to needed changes or improvements, only four of the nine students made specific suggestions. Two problems identified and suggestions made follow:

Changes needed for possible improvements.

> A problem that I think my center faced was that it may have been geared towards a higher grade. I think that was simply because students at the third grade level have not yet been exposed to the presidents or the political system so the concepts in the center may have been too new for them to want to apply.

> I would have changed this lesson a little bit. First off, I would have gotten a better idea as to what the students' level of math skills was. Some of the problems were way too easy while others were too hard. I also might have allowed the students to take a flag off the basket so that the students could represent a different country while they played. By having the students represent different countries they would learn the flags associated with those countries along with math.

Virtually all the preservice teachers felt that the overall experience of being able to learn about a teaching strategy, design a lesson and materials, and then teach using what they were learning about was highly beneficial. Their reflective statements included phrases such as, "a great way to learn," "worthwhile," "I enjoyed," or "I thoroughly enjoyed." One student's reflective statements seemed to capture the feelings expressed particularly well:

> I found the learning center project to be very worthwhile. Once I understood what was being expected of me, the project went quite well. I loved the fact that we were open to do almost whatever we wanted with our learning center and thematic unit. I

> had never had so much freedom to be so creative before, and at first I was extremely uncomfortable. There were no boundaries [there were no boundaries only guidelines], so we were free to do whatever we pleased. This made the project unique, and I thoroughly enjoyed doing it.

Another student focused on her own feelings based on the experience of being able to share the process with the third grade students:

> Overall, I enjoyed doing this project and I think it went better than I expected it. It really helped that the students were so involved and interested. It was interesting to see what the students had to say about the center on their evaluation. Many of their ideas were very beneficial and I could use them later to improve my center. One student suggested using multiplication problems instead of parts of speech. This was very ironic because I had actually considered doing this. Also, some students said that a few of the words were too difficult and they did not know what they meant. In general, the children seemed to really like the hands-on component of my center. They enjoyed being able to actually manipulate the eggs and work with each other. This feedback was very beneficial because now I have a better understanding of what third graders do and do not know. I enjoyed the project very much, and am looking forward to doing more centers either in other classes or in my own classroom.

Conclusions

Today teachers are evermore conscious about how time is utilized in the classroom. At all levels, from preschool through higher education, teachers are being held accountable for every aspect of student learning. Even as teachers collaborate and provide mentorship they are held accountable in their efforts to support meaningful learning experiences for each of their students. The primary purpose of this study was to examine the perceptions of preservice teachers and third graders as they experienced the use of learning centers in the classroom setting. When the sophomore level preservice teachers were able to practice what they were learning about in the classroom, they experienced the complete process of thinking that goes into to the preliminary stages of planning, teaching, and evaluating student learning. They also were able to develop their reflective skills in a more meaningful context as they assessed their own learning along with the learning of the children they were teaching in the process of completing

the project. As seen in their reflective evaluations, they identified the importance of several factors contributing to successful learning including prior knowledge, motivation, challenging material, and the importance of direct instruction to facilitate independence in learning. This was evident as the preservice teachers expressed that it would have been helpful to know ahead of time; what the third graders knew, what their math skills were, what they were interested in or whether they would like the activity that was planned, that some of the materials were either too hard or too easy, and in the end that the children all understood what was expected. Considering that these issues presented a bit of a disadvantage for the preservice teacher, the quality of the learning centers that they designed was very high. This was supported by the varied and yet consistently positive responses made by the third graders on the learning center surveys.

Because of the open-ended questions in the survey, the children were specific in identifying what they liked about the learning centers and how they could be improved. They also were able to self-assess their ability to understand what they learned and then were prompted to think about extending their learning. These skills and concepts, along with those addressed in the learning center activities are all included in the Illinois Learning Standards. It can be concluded from the learning center surveys and the preservice teacher reflections that this collaborative project was a powerfully positive learning experience for all participants.

Implications

The role of assessment is well established in its relationship to quality teaching. For preservice teachers to participate early in their development at the classroom level and reap the benefit of assessing children's learning as feedback for their own (preservice teacher) learning serves to enhance skill development and preparation for the ever increasing complexity of today's classrooms. Additionally, studies of this nature can be extended to further expand the

knowledge of collaborative and mentoring programs, gain perspective on how children view their own learning, develop self-assessment and reflection skills, and support motivation of participants. It was just by chance that there were only nine students in this section of the introductory methods class. Typically, this class has 20-25 students. Had there been an enrollment of 20 plus students, the project design and overall outcome almost certainly would have been different. In one way this could be considered a limitation of the study due to the unlikelihood of having college classes with so few students, making it difficult to repeat similar experiences. On the other hand, it can be considered a strength as the smaller group for this study provided information to help in designing similar studies for larger groups.

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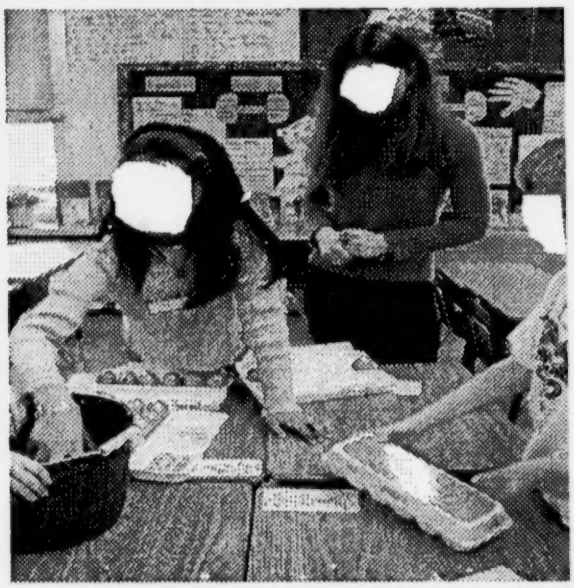
APPENDIX A



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APPENDIX B

Learning Center Assessment

Please let us know what you thought about the learning center by answering the questions below.☺

1. What was "cool" about the center? _____

_____

_____

2. What would make it awesome (better)? _____

_____

_____

3. Did you understand the directions? _____

_____

_____

4. What did you learn? _____

_____

_____

5. What would you like to learn more about? _____

_____

_____

Thank you for sharing your ideas. I hope you enjoyed the learning center.☺

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